



LC8800 Retail Hardened Computer

Service and User Manual

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Introduction

This manual provides information on the identification and troubleshooting, test procedures and a list of replacement parts for the LC8800 Retail Computer.

Who should read this manual?

This manual is intended only for technicians trained by Bematech.

How this manual is organized

Chapter 1

Knowing the product. Description and operation of LC8800 Retail Computer.

Chapter 2

Product maintenance and test procedures.

Chapter 3

LC8800 Retail Computer operation and troubleshooting.

Chapter 4

LC8800 Retail Computer technical specifications and features.

Other related publications and software

User's Manual
Programmer's Manual
Quick Start Guide

User Software
Technical Support Software

Where to find more information

English Content at <http://www.bematech.com>

History Change Table

Revision	Release Date	Description of Changes
0.A	19/10/2011	Preliminar Release – Eduardo Bastos
0.B	16/03/2012	General Review

Safety information

The information contained herein is subject to change without notice.

This section presents important information intended to ensure the safe and effective use of the product. Please read this section carefully and store it in an accessible place for future reference.



Follow all warnings and instructions marked on the product.

To disconnect the LC8800 from the electrical power supply, turn off the power switch and remove the power cord plug from the wall socket. The wall socket should be always easily accessible.

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Do not use this product near water.

This product should be operated from the type of power indicated on the power adaptor. If you are not sure of the type of power available, consult your dealer or local power company.

Do not allow anything to rest on the power cord. Do not locate this product where people will walk on the cord.

If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.

Allow at least 6 inches of space from the top of the unit and 3 inches from the sides to allow proper ventilation.

We recommend all servicing done on this product to be performed by qualified service personnel. Aside from upgrades or swapping out the compact flash or hard drive please refer all other servicing to the Bematech RMA Department.

Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- a. When the power cord or plug is damaged or frayed
- b. If liquid has been spilled into the product
- c. If the product has been exposed to rain or water
- d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other may result in damage and will often require extensive work by a qualified technician to restore the product into normal condition.
- e. If the product has been dropped or the cabinet has been damaged
- f. If the product exhibits a distinct change in performance, indicating a need for service.

Chapter 1

Product Description



High performance, flexibility and ease of operation are some of the features that make the Bematech LC8800 the ideal computer for your retail outlet, operating with high quality, high speed and reliability with reduced operation cost.

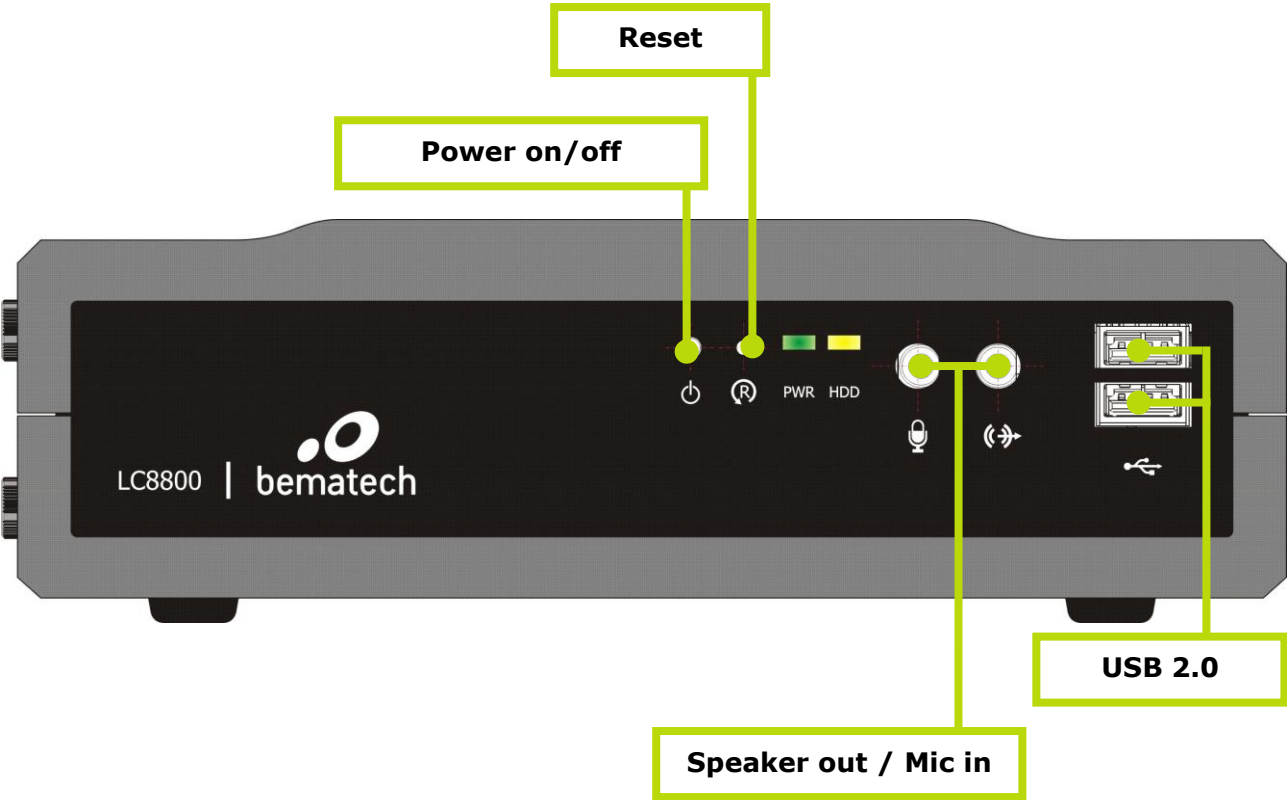
Package contents

Remove the LC8800 Retail Computer from the package and make sure that all components listed below are available and in perfect shape:

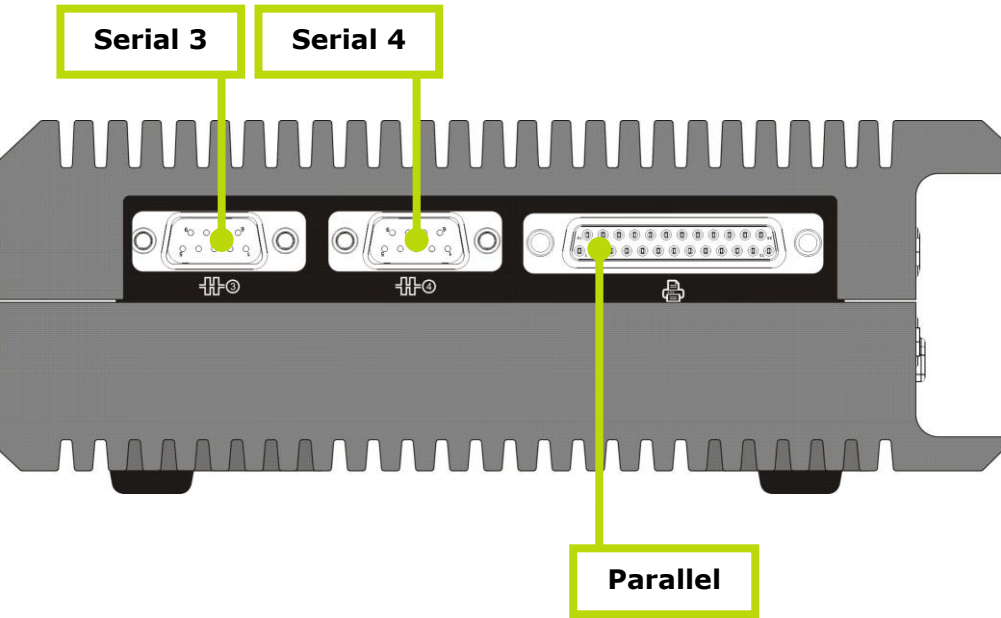
- LC8800 Retail Computer;
- Quick Reference Guide;
- Power supply;
- Power cord*;



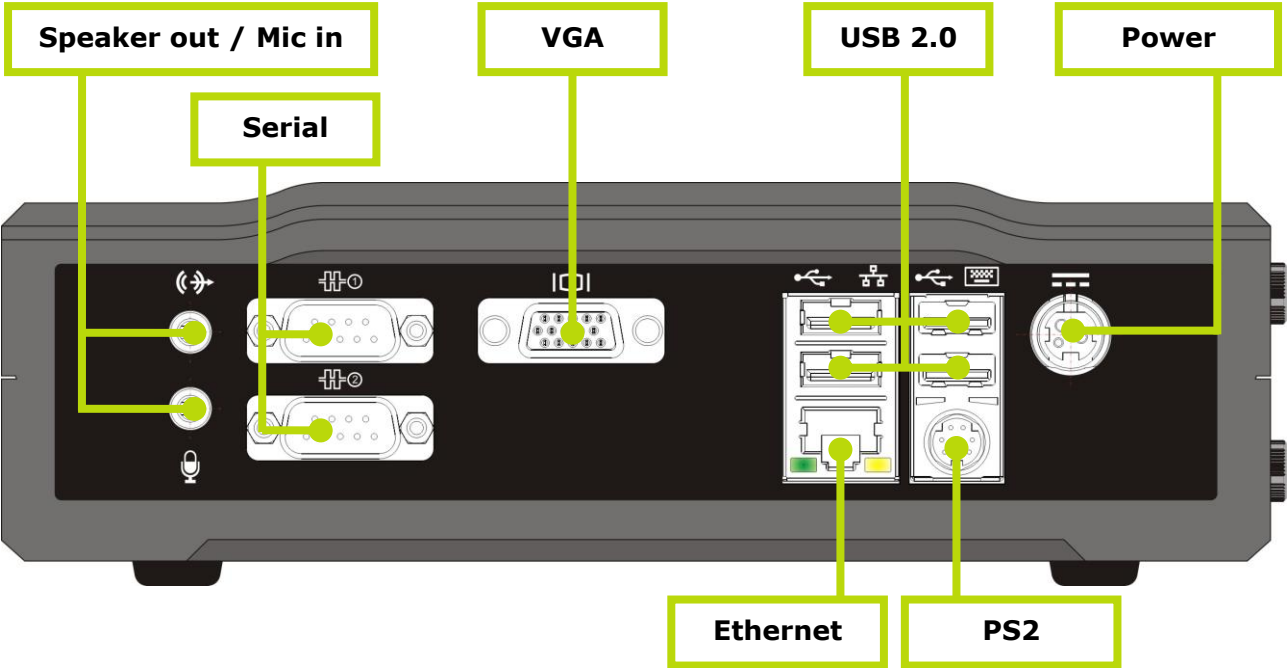
Front Panel



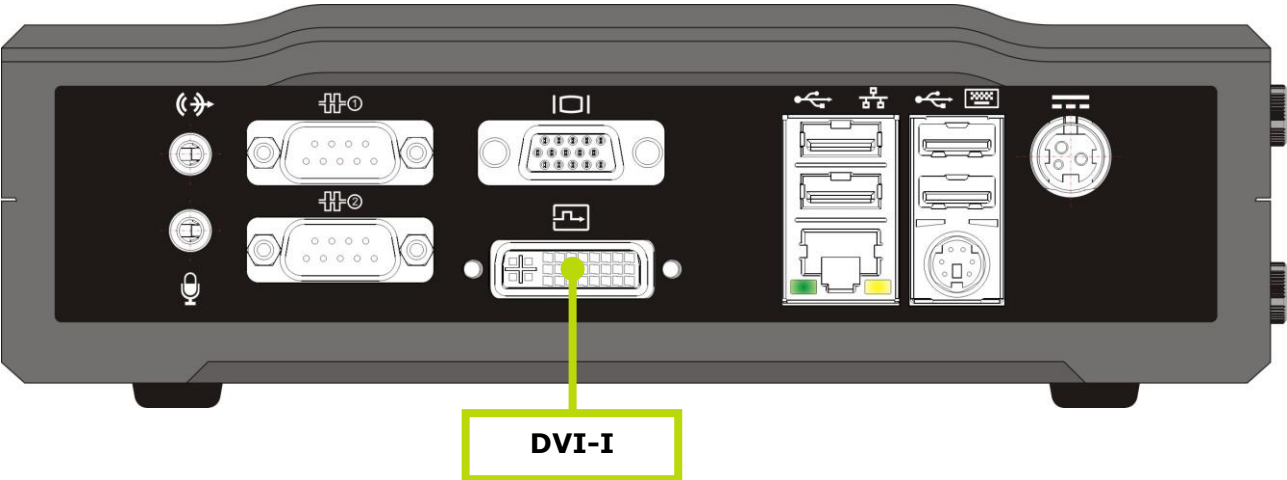
Side Panel



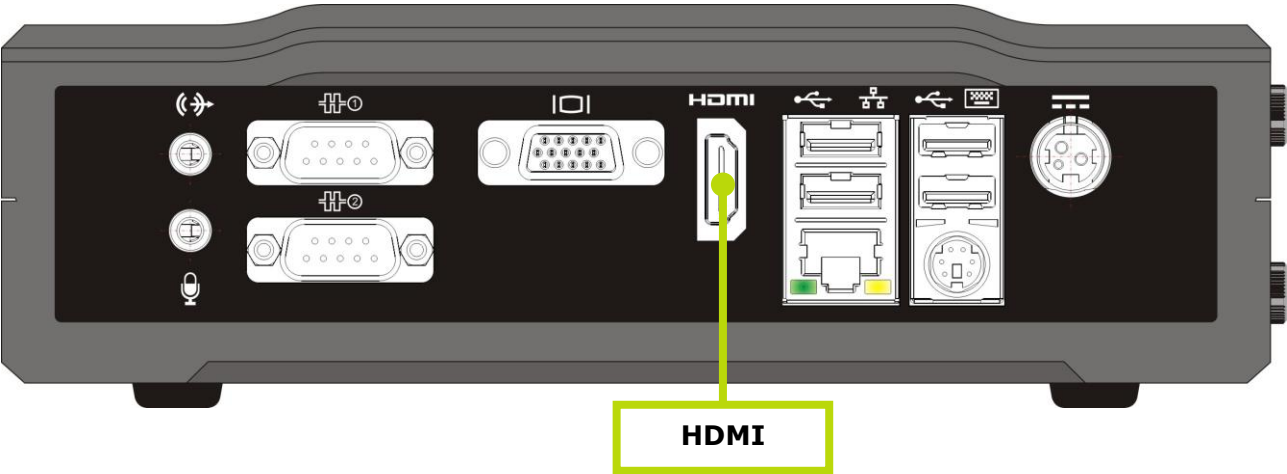
Back Panel



DVI-I Option:



HDMI Option:



*VGA is default for all versions

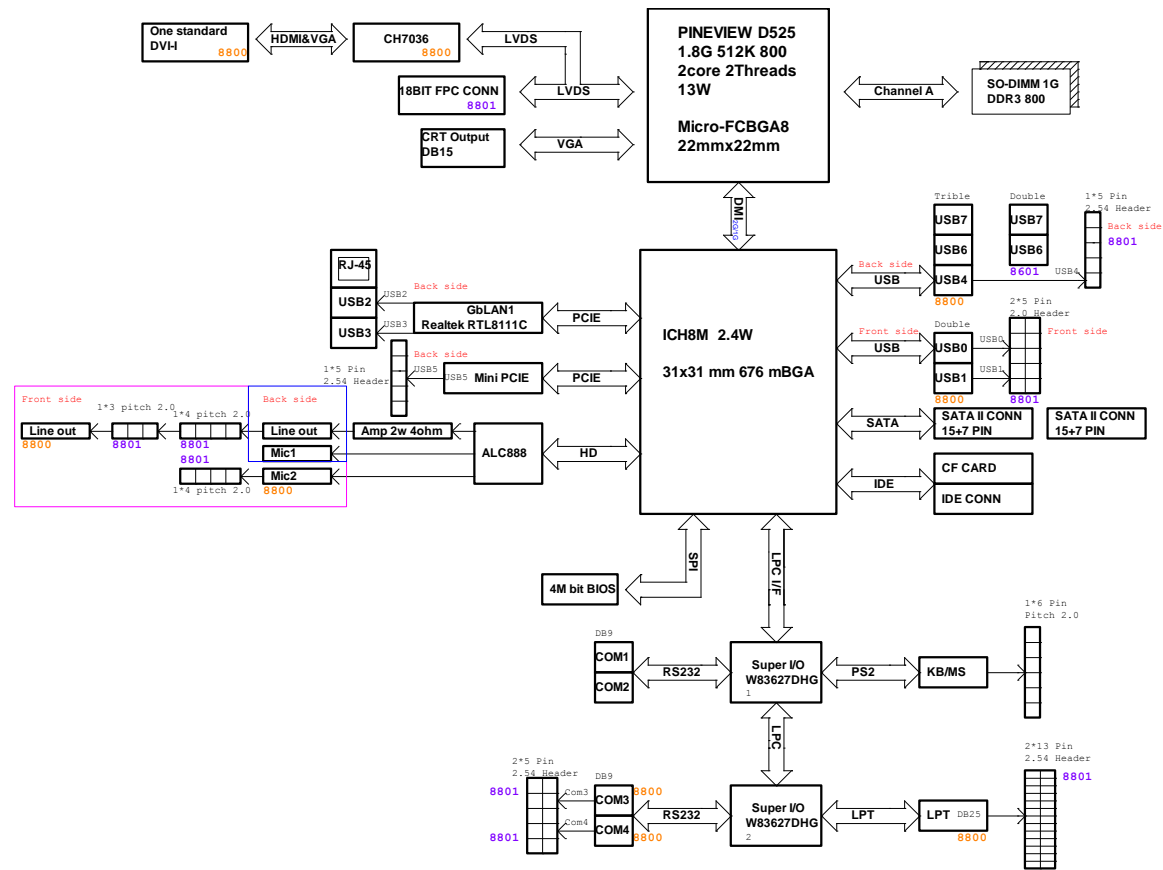
Product electronics

Control Board

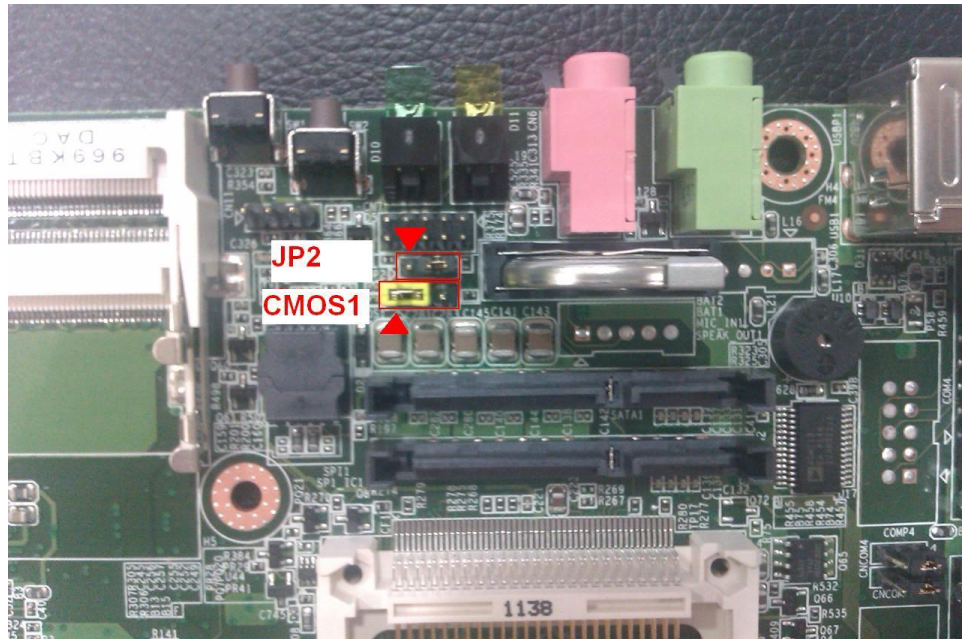
CPU	- Socket Type	Intel Mobile processor with BGA package	
	- CPU Family	Intel ATOM D525 processor, 1.8GHz,	
	- FSB	800 MHz	
	- L2 Cache	512 KB 8-way L2 cache	
	- CPU Voltage	TYPE 1.05V	D525 TDP 13W
VRM Solution	- CPU PWM	1 Phase PWM for D525	
Chipset	- North Bridge	NA	
	- South Bridge	Intel ICH8M	
	- Flash ROM	2MB SPI Flash	
	- Super IO	Winbond W83627UHG	
	- DVI/TMDS Transmitter	Ch7036	
Memory	- Socket	DDR3 800 SO-DIMM x1	
	- Channel	Single Channel	
	- Max Memory Support	2GB	
Storage	- Type	CF *1 IDE*1 SATA*2	
	- Raid	N/A	
Graphics	- VGA Core	Intel	
	- VRAM Size	Max Share 224MB	
	- LVDS	Single I channel 18bit	
	-DVI	Chontel CH7306	
Audio	- Controller	ICH8M HD	
	- Codec	Realtek ALC892	
	- Amplifier	2W 4ohms	
LAN1	- Controller	Realtek R8111C controller	
	- WOL	Yes	
	- PXE	Yes	
Super IO	- Controller	Winbond W83627UHG	
	- Watch Dog Timer	0~255 sec/ms	
Expansion	- CF Slot	1	Master and slave configuration selectable
	- IDE	1	ATA 100/66/33
	- SATA	2	15+7 PIN
	- Mini PCI-E	1	V1.0 V1.1
BIOS	- Vendor	AMI	
PCB Certification	- Form Factor	149.5*180mm	
	- Layer	● 6	
	- Color	● Green	
	- Logo	● FCC CE ROHS	
	EMI	CLASS A	
Power	- Single power input	12V @ TBD (A)	
	- Operation Environment	Humidity : 0 ~ 95% RH	
I/O in back side	RJ45+Double USB CONN RS232 DB9 VGA DB15 + DVI-I VGA DB15 Speak OUT& MIC IN PS/2 CONN Power jack	Temperature: 0 °C ~ 40 °C	
		1 usb6 usb7	
		1 COM1 COM2	Double CONN
		1 DVI+D-SUB 15	Slim type
		1 DB15	Slim type
I/O in front side		1 Double deck Jack	
		1 Double deck jack	
		3 pin power jack	
I/O in front side			

Double usb conn	1 ,USB 0 USB1	
Single Audio jack	2 mic in and speak out Single jack	
Power BTN	1	
Reset BTN	1	
HDD LED	1	Organe
Power LED	1	Green

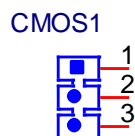
Block Diagram



Control board Jumpers List



- CMOS1



PH_3x1V_2.54mm

Pin #	Signal Name
1	VBAT
2	RTC_RST#
3	GND

- JP2 : Power off after push sw1 more than 5 sec function select

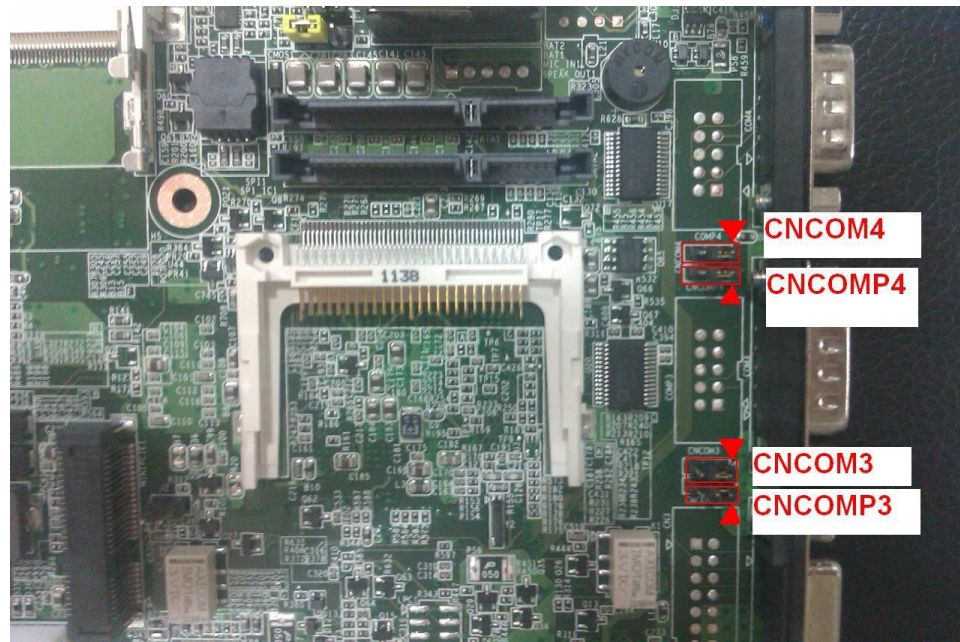


JP2

PH_3x1V_2.00mm

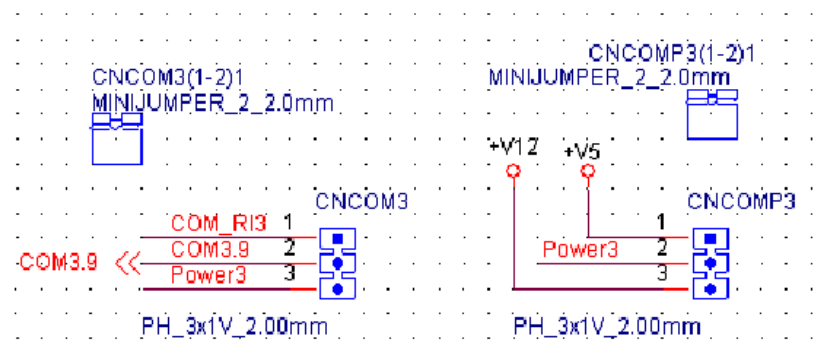
JP2(1-2):power off after push sw1 more than 5s

JP2(2-3):disable this function



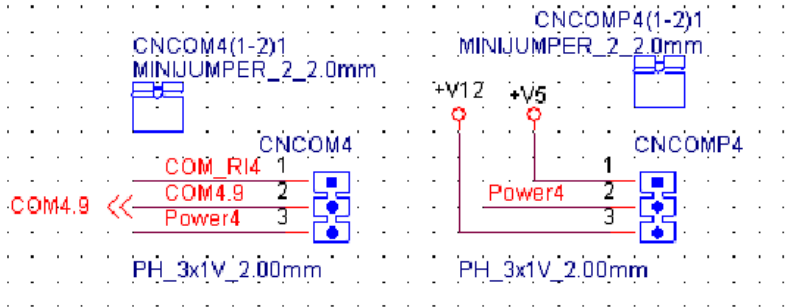
CNCOM3&CNCOMP3

	Jumper		
CNCOM3	1-2	2-3	2-3
CNCOMP3	*	1-2	2-3
COM3.9	RI	+V5	+V12



CNCOM4&CNCOMP4

	Jumper		
CNCOM4	1-2	2-3	2-3
CNCOMP4	*	1-2	2-3
COM4.9	RI	+V5	+V12



AC Adapter



Basic Features

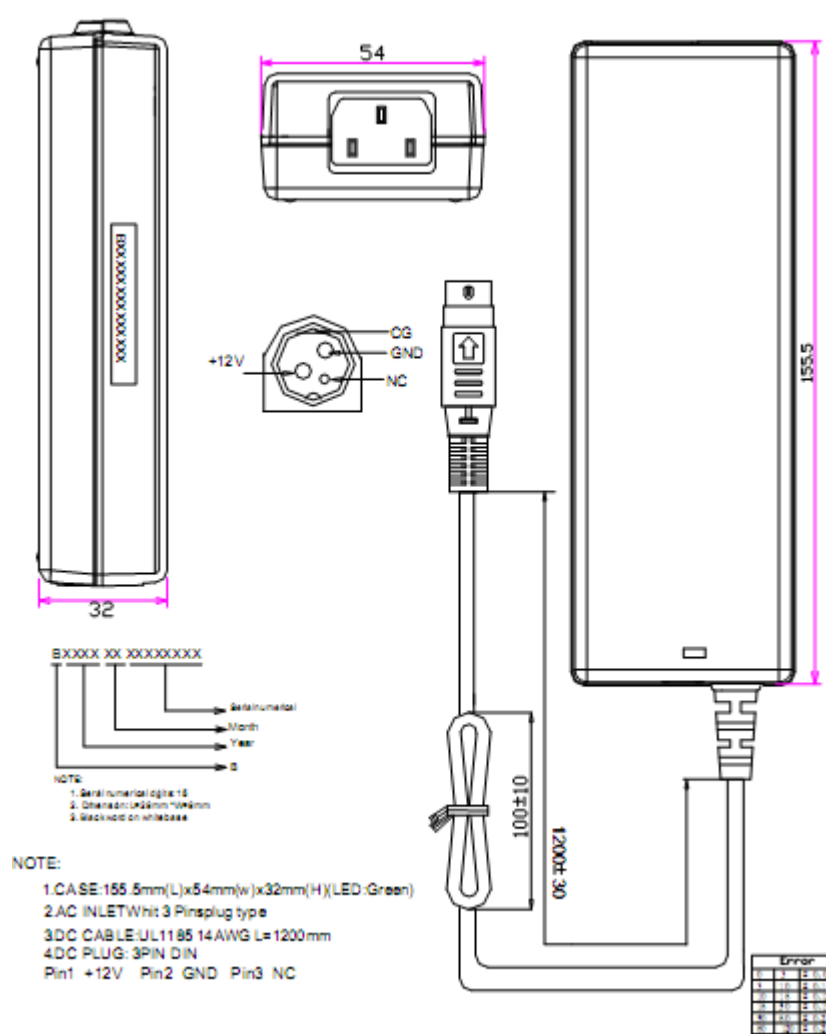
- Universal Input Voltage 100 to 240VAC
- Consumption: 84W
- Output Voltage: 12V
- Output Current: 7A
- High Efficiency 87% Maximum
- High Reliability
- Low Ripple: Output voltage 1% max.
- Low Noise: Output voltage 1% max.
- Short Circuit Protection
- Over current Protection
- Over voltage Protection

Environmental

- Operating Temperature: 0 ~ +40C
- Operating Humidity: Max 75%
- Storage Temperature: - 20 ~ +70C
- Storage Humidity: Max 95%
- Hi-Pot:
 - Between primary to secondary: 1800Vac 50Hz for 3sec
 - In production line shall be more than 2sec
 - Conditions of grounding test: test current 25A (maximum), 100mohms (maximum)
- MTBF: 40,000Hrs power on at 25 C

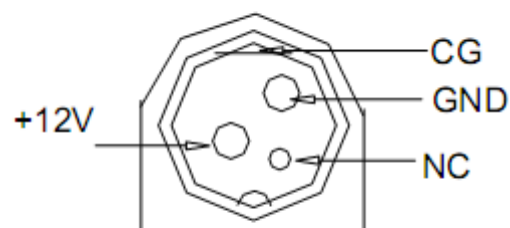
Dimensions

- L155.5*W54*H32mm



Connector

- Connector type: 3 pins



Certifications

bematech 

AC ADAPTER

Part No: PB8800

MODEL: PA1090-120T1A700

INPUT: 100-240V~ 50-60Hz 2.0A

OUTPUT: 12V  7.0A 84W Max

EFFICIENCY LEVEL:   

WARNING:

RISK OF ELECTRIC SHOCK,

DO NOT OPEN, INDOOR USE ONLY



LPS

RoHS

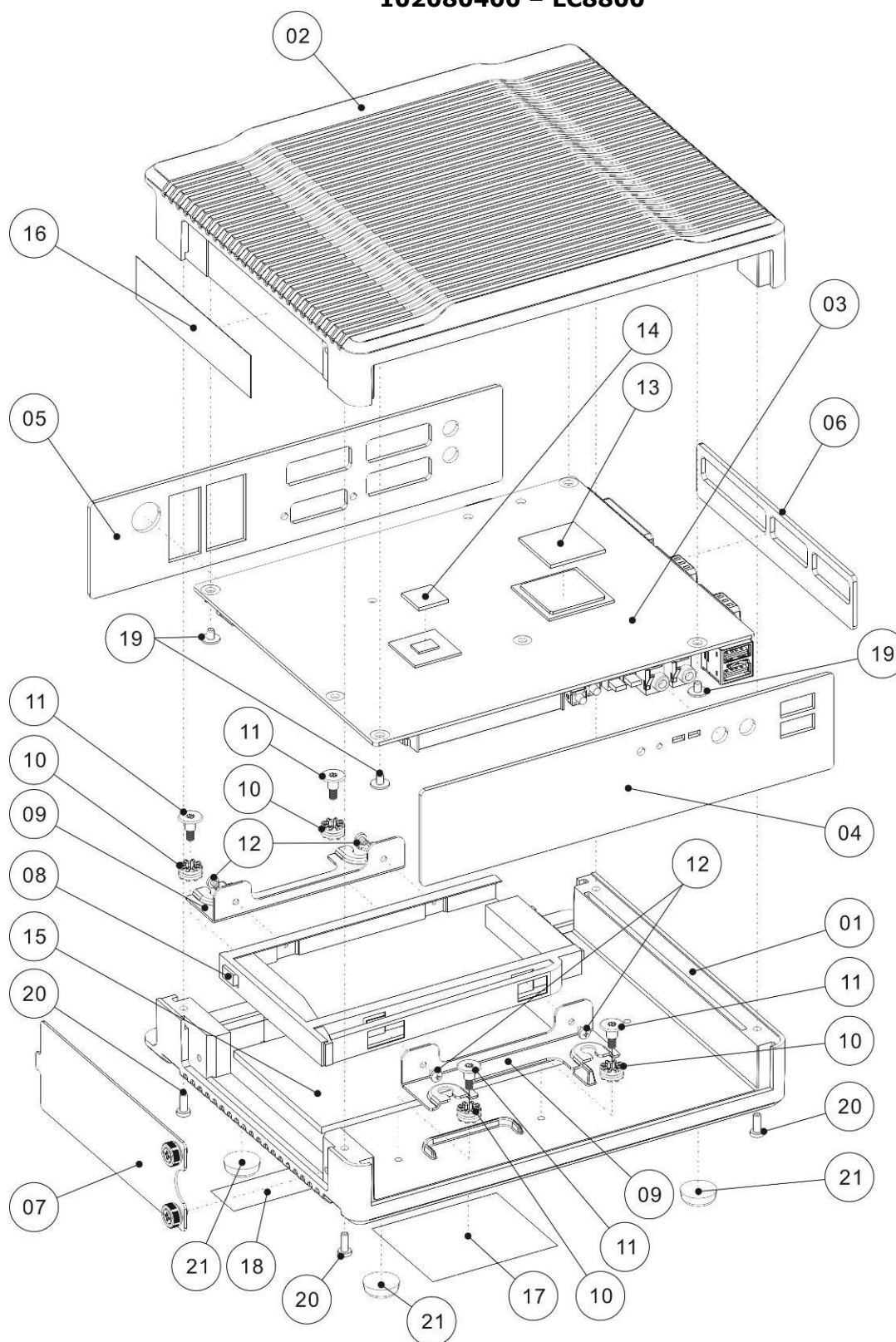
Manufactured by PEC in China

Product exploded view

ATTENTION!





The following part numbers are not necessarily available as standalone units, as they are part of a replacement kit. For further information, refer to the Support section of our website www.bematech.com




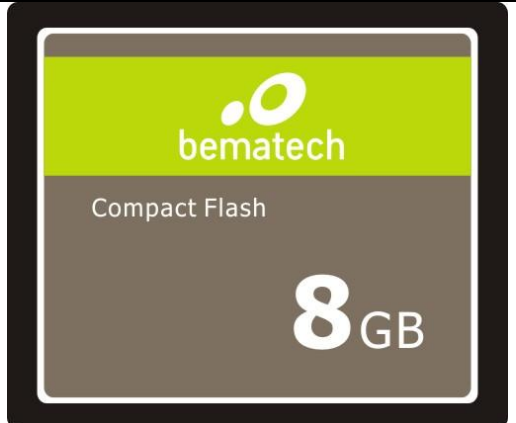
102080400 - LC8800

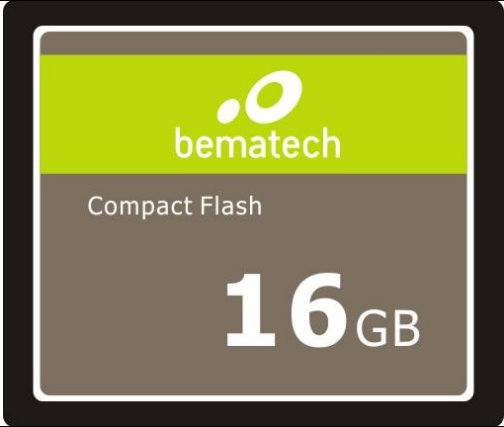
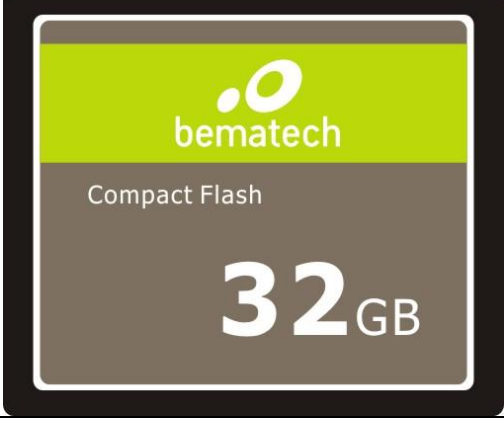
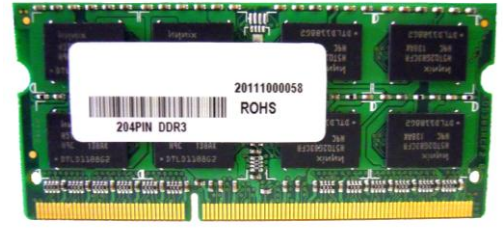
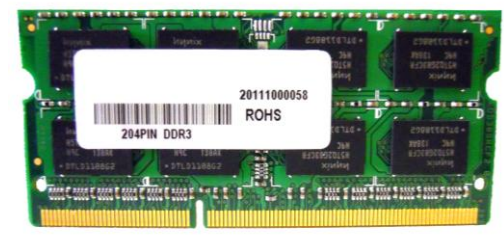
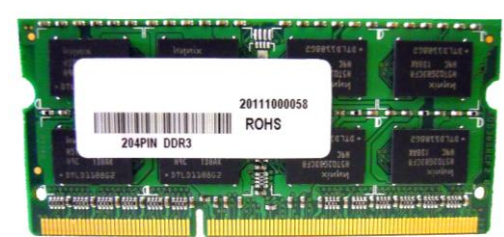


N°	Part Number	Description	Quantity
01	440020700	LC8800 BOTTOM HOUSING	01
02	440020800	LC8800 TOP HOUSING	01
03	392006800	LC8800 MAIN PCBA	01
04	461003800	LC8800 FRONT PANEL ARTWORK	01
05	461003840	LC8800 BACK PANEL ARTWORK	01
06	461003820	LC8800 SIDE PANEL ARTWORK	01
07	240007000	LC8800 HD COVER ASM	01
08	440020100	LC8800 HD INTERNAL TRAY	01
09	440020000	LC8800 HD TRAY BRACKET	02
10	420011800	ANTI-SHOCK WASHER Ø4,8x5,4	04
11	420011400	HD FIXATION SCREW M3x5x9,8	04
12	420011300	SCW M2,5x3 PH PAN HEAD	04
13	479021420	LC8800 ICH THERMAL PAD	01
14	479021410	LC8800 D525 THERMAL PAD	01
15	479021400	LC8800 HD THERMAL PAD	01
16	750033130	LC8800 HD INSTRUCTIONS LABEL	01
17	750033100	LC8800 CE FCC LABEL	01
18	750033110	LC8800 SERIAL NUMBER LABEL	01
19	420011200	SCW FLANGED M3x4	04
20	420011700	SCW PH M3x8 PAN HEAD BLACK	04
21	479021500	LC8800 RUBBER FOOT	04

Field Replacement Units

LC8800 FRU	DESCRIPTION	IMAGE
T903008200	FRU LC8800 CTRL BOARD DVI-I VGA	
T903008300	FRU LC8800 CTRL BOARD HDMI VGA	
T903008400	FRU LC8800 CTRL BOARD VGA	
T903008500	FRU LC8800 HARD DRIVE 160GB	

T903008600	FRU LC8800 SOLID STATE DRIVE 16GB	
T903008610	FRU LC8800 SOLID STATE DRIVE 32GB	
T903008800	FRU LC8800 SATA CABLES	
T903008900	FRU LC8800 COMPACT FLASH 8GB	

T903008910	FRU LC8800 COMPACT FLASH 16GB	
T903008920	FRU LC8800 COMPACT FLASH 32GB	
T903009000	FRU LC8800 MEMORY CARD 1GB	
T903009010	FRU LC8800 MEMORY CARD 2GB	
T903009020	FRU LC8800 MEMORY CARD 4GB	

T903008700	FRU LC8800 POWER SUPPLY	
T904009500	FRU LC8800 RUBBER FOOT	
T904009300	FRU LC8800 WALL MOUNT BRACKET	
T904009400	FRU LC8800 VERTICAL STAND	

Product disassembly and assembly procedures

Precautions before Disassembly and Assembly

1. Try to avoid disassembly, assembly and unnecessary adjustments on the LC8800 parts that are working properly;
2. Before turning LC8800 on, make sure that all cables are properly connected;
3. During the maintenance procedure, do not let loose screws and other components inside the product;
4. When handling printed circuit boards, do not use gloves that can generate static electricity. Use an anti-static wrist-strap connected to an anti-static mat or to a grounding system adequate for that purpose;
5. Do not place the printed circuit board over conductive surfaces. Use an anti-static bag or an anti-static mat connected to a grounding system adequate to that purpose;
6. When assembling or disassembling the LC8800, verify if the cables have any visible damage and reconnect them in normal position, noting the proper polarization;
7. The steps below will show how to disassemble the product; the reassembly is done in the same way, but backwards.

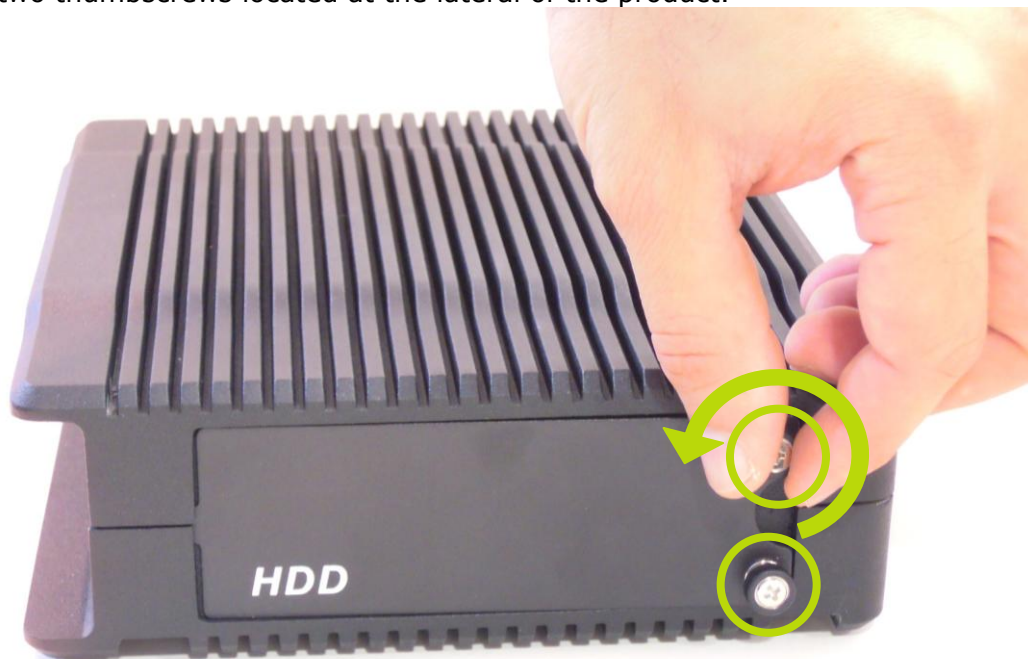
Hard Drive easily maintenance

Replacing your Hard Drive (or SSD) on LC8800 is a very easy task that anyone can complete; no tools are required to perform this action.

Before starting the replacement process, power down your LC8800 and switch it off from the wall outlet.

Wearing an anti-static wristband is preferable whenever working with sensitive electrical equipment.

Unscrew two thumbscrews located at the lateral of the product.



Slide out the Hard Disk metal cover.



You will see the HD tray button, slide it to the left, the Hard Disk will come out.





Gently remove the Hard Disk.

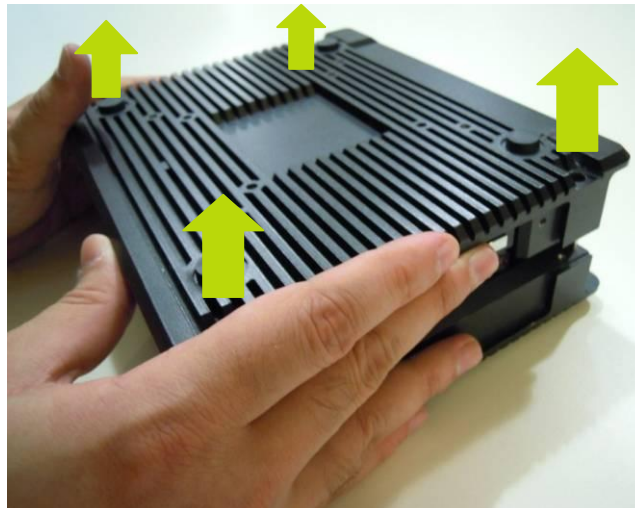
Opening the unit

To open the LC8800 unit, it is necessary to first, remove the HD metal cover, following the process described on the previous topic.

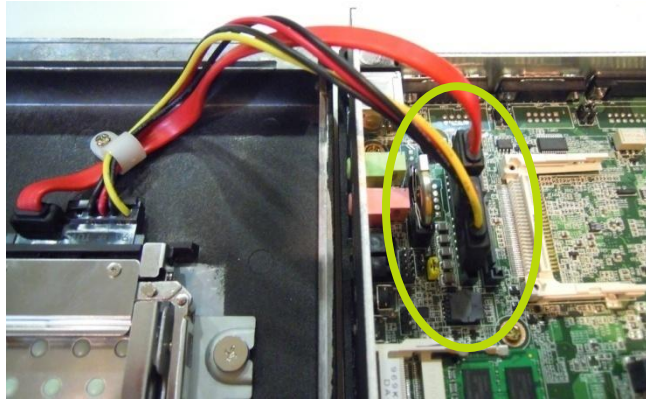
After the Hard Disk metal bracket is removed, release four (x4) M3 screws located on the bottom side of the Bottom housing.

Hold the unit upside-down and lay it down on a clean, soft and flat surface.

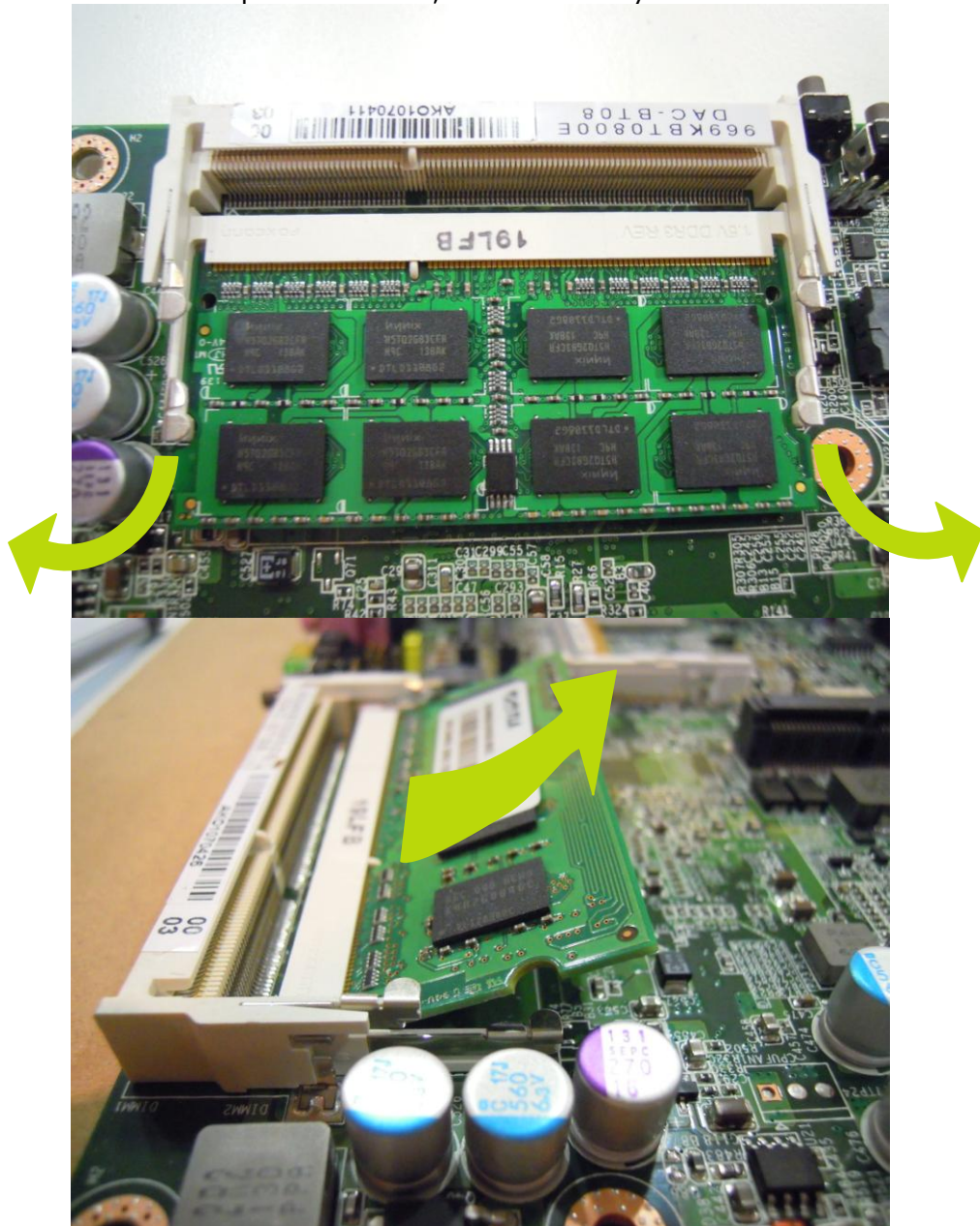
Gently slide the Bottom housing up, be aware of the connected SATA cables, do not move the Bottom housing abruptly otherwise the cables and/or connectors could be permanently damaged.



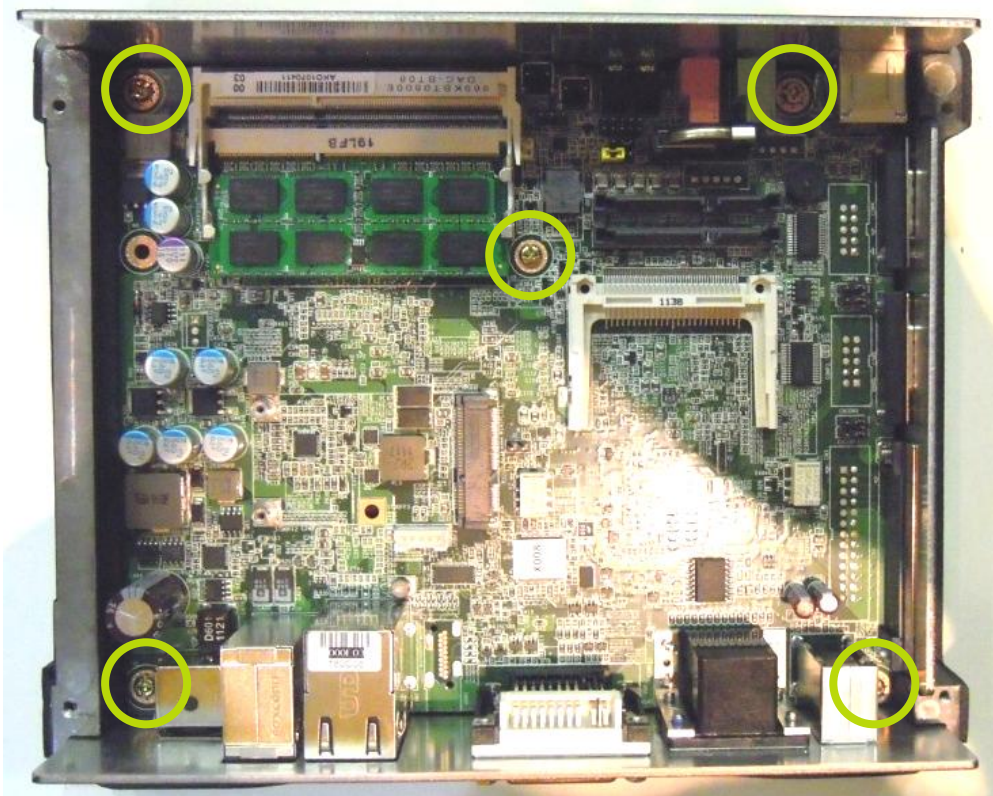
Placing the Bottom and Top housing side-by-side unplug the SATA cables (Power and Data) from the main board. Do not pull the cables out holding them by the wire; always unplug them holding by the plastic plug.



Now the Top and Bottom housing subassemblies can be disassembled. Start by the Top housing subassembly. First remove the memory card located at the main board. Pull out two metal snaps on the dock, so the memory card will come out.



After unplugging the SATA cables and releasing the memory card you can easily disassembly the main board. Remove x5 screws that fix the main board to Top housing and gently pull it out. Attention: there are three thermal pads between the main board and the housing, so be careful when you try to pull the main board out because it can be stuck to the housing.



On the Bottom housing there is only the Hard disk bracket to be removed.
Start the disassembling process removing the plastic cable tie that fix the SATA cables.

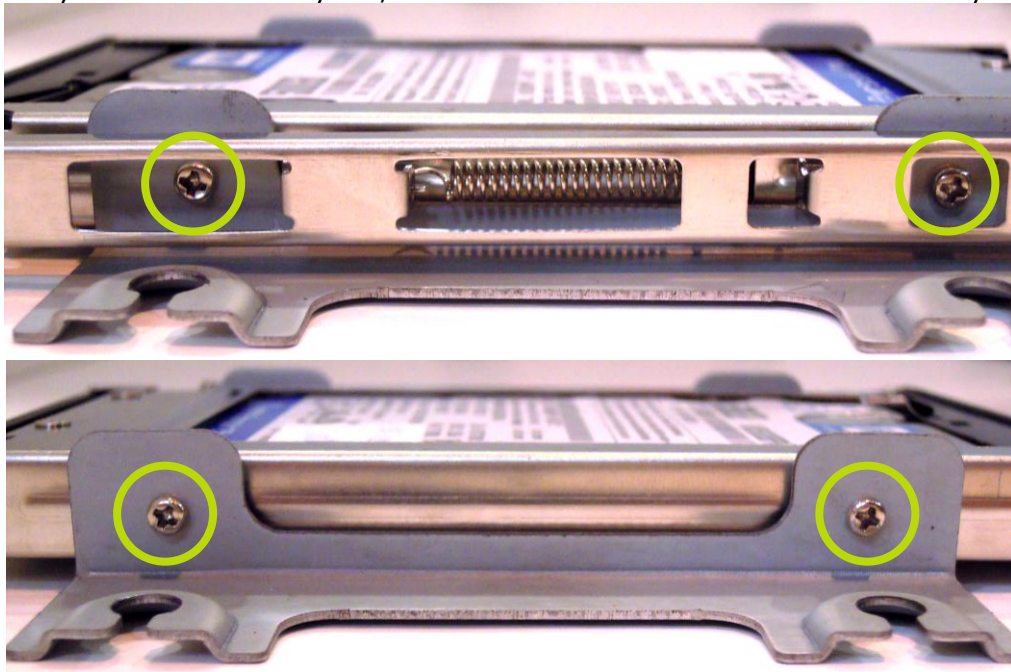


Unplug the cables from the Hard Disk tray.
To release the Hard Disk tray is necessary to disassembly the Hard Disk tray brackets first.
Unscrew two screws that fix the stamped part on each side.



After removing these four screws the whole set will be free to be removed. Attention, just like to main board, there is a thermal pad underneath the Hard Disk tray. Pull the hard disk tray out gently.

To disassembly the Hard Disk tray set, remove two screws on each side of the tray.



Preventive Maintenance Procedures

Cleaning Procedures

The following tips will help keep your LC8800 functioning at the optimal level.

- Remember to unplug the display unit from the power outlet before cleaning.
- Do not use alcohol (methyl, ethyl or isopropyl) or any strong dissolvent. Do not use thinner or benzene, abrasive cleaners or compressed air.
- To clean the LC8800 unit cabinet, use a cloth or soft brush lightly moistened in a mild neutral detergent. Do not immerse unit in water.
- Put the cleaner on the rag and wipe the LC8800. Never apply the cleaner directly on the LC8800.
- Avoid getting liquids inside the LC8800. If liquid does get inside, have a qualified service technician check before you power it on again.

Chapter 3

Operation and Troubleshooting

Indicative Lights

The LC8800 Retail Computer will flash indicative messages through the green Power LED (PWR) and/or yellow Hard Disk LED (HDD). The information may vary from the computer status to critical error warnings, which can lead to module replacement to correct a specific issue.

On the chart below, you can see the messages given by the Retail Computer and the ways to correct the most common errors that may occur.

UPDATE INFO

Colors	LED Status	Light Signs	Meaning - Procedure
Green		On	Power On
		Flashing	Power Failure
		Off	Power Off
Yellow		On	Hard Drive been access
		Flashing	
		Off	Hard Drive not been access

Green LED – Power Status

Recoverable Errors are the ones that the user can usually solve without technical intervention or module replacement. In some situations these errors can be persistent and technical assistance intervention is required to fix it. These errors are:

Green LED Alight – Power On

There is a sensor on the right side of the printer (picture above) that notifies it when the cover is closed. If the error message persists, even if the cover is closed, you can verify the following items:

- Is the cover sensor in the indicated location?

Is the sensor placed properly? Notice the correct way to insert the sensor on the picture on the side. After that, the issue may be solved.

- Verify the sensor connection on the connection board. The right place to connect this cable is on the CN4 connector (as shown on the image on the side). Also, verify the sensor cable (image below), as it must be in perfect conditions on all its length.

Obs. On the cover sensor cable there is also the paper sensor. If any of those sensors show any problems, this cable must be replaced.

- Verify if the mechanism plastic chassis pins

- When pressing the sensor activation key (image on the side), you can hear a clicking sound which indicates the proper operation of the sensor. If you can't hear the clicking sound it's very likely that the malfunction is in the sensor. Replace it to solve the problem.

where the sensor is connected (image on the side) are not broken, which would let the sensor out of its position, leading to its malfunction. To correct the problem, replacement of the plastic chassis will be required.

Green LED Flashing – Power Failure

- Is the paper sensor located on the indicated place?

Verify if the connection board sensor is properly placed and if there is any dirt obstructing it.

- Verify the connection of the board sensor. The correct position to connect this cable is on the CN4 connector (as shown on the image on the side). Also, verify the sensor cable (image below), as it must be in perfect conditions on all its length.

Obs. On the paper sensor cable there is also the cover sensor. If any of those sensors show any problems, this cable must be replaced.

Green LED Off – Power Off

The print Head (picture on the side) has an internal temperature sensor against overheating, so when the print head reaches 60°C it informs the printer that a threshold has been reached. From this point on, the printer informs the user through the Information LED, blinking 2 times in yellow color and reducing the quantity of items to be printed. With a slower print rate the print head cools down, returning to its normal function.

Yellow LED – Hard Disk Status

These are errors that require intervention by an Authorized Service . The errors are described as follows:

Yellow LED Alight – Hard Disk Accesement

Firmware error on the control board. Replace the control board to address the issue.

Yellow LED Flashing – Hard Disk Accesement

Firmware error on the control board. Replace the control board to address the issue.

Yellow LED Off – Hard Disk non-accesement

Firmware error on the control board. Replace the control board to address the issue.

Troubleshooting

Symptom	Possible solution
VGA monitor display is blank	If the power LED on the monitor is off, check that the monitor is properly connected to its power supply and the power supply is properly plugged into a functioning AC outlet.
	Adjust the contrast controls on the monitor display.
	Check that the VGA cable is plugged in properly on both the monitor and the LC8800.
	If the power LED on LC8800 is off, check that the LC8800 is properly connected to its power supply adapter and the power adapter is properly plugged into a functioning AC outlet.
	If the LC8800 is connected to a power supply but the power LED is off, press the power button to turn on the unit. If it does not turn on, try replacing the power supply.
	Replace the LC8800 if necessary.
VGA monitor display is blue or frozen	Reset the LC8800 and check the system information on the screen during boot up.
	If unit reboots correctly, try running application again. If same problem occurs, try reinstalling the application software.
	If unit cannot reboot correctly, try replacing the hard disk drive (or compact flash).
Station is not communicating with server (for KDS applications)	Check that the LC8800 s' IP addresses are correct and unique (no conflict) and the port number matches application software setup.
	Check the Ethernet cable connections at the problem LC8800 s and at the Ethernet hub or switch.
	Check that host server IP address matches the LC8800 IP address group. Try pinging one of the LC8800 IP address from the host.
	Check host server application software setup. Restart software if necessary and test again.
	Reboot the host server and test again.
	Replace Ethernet hub or switch and test again.

LC8800 does not respond to keyboard commands	Check the keyboard cable connections at both the keyboard and the LC8800. Unplug the cable and re-insert fully. Check whether it snaps in correctly. Note that it's necessary to hold the back end of the PS2 connector near the cable exit and push in hard to get the locking connector into place.
	Test with known good keyboard and cable. If it works, replace the cable and/or keyboard.
Attached RS-232 device is not working	Check that the device and LC8800 have power.
	Check RS-232 connections at the device and LC8800.
	Check whether baud rate and data format settings of application is matching with the device.
	Attach the wrap plug to the device end of the RS-232 cable and run an RS232 port test program. If the test passes, replace the serial device. If the test fails, go to step 5.
	Attach a wrap plug to the RS-232 port of the LC8800 and rerun the RS-232 loop test. If the test passes, replace the RS-232 cable. If the test fails, replace the LC8800.
LC8800 does not boot from internal compact flash	Check in BIOS setting whether the boot device priority is set to boot from the compact flash (note that the compact flash is installed as IDE hard disk drive).
	Check if the operating system on the compact flash is corrupted. If so, try reinstalling the operating system or replace the compact flash.

Chapter 4

Technical Specifications

Features:

High performance, flexibility and easy operation are some of the features that make the Retail Computer LC8800 the cutting edge solution to your retail outlet, where high quality, high speed, high reliability and reduced costs are priorities.

Characteristics		Specification
Processor	Intel® Atom™ D525 1.8GHz	
Memory	2GB DDR3 1066, up to 4GB	
Storage	-External accessible SATA HDD or SSD -Compact Flash	
Primary Video – VGA port	SXGA+ resolution : 1400x1050 pixels	
Secondary Video (optional) – DVI-I	SXGA resolution : 1280x1024 pixels	
Network Interface	10/100/1000 bits/s	
Keyboard / Mouse	Shared Single mini DIM connector	
USB Port	6 x USB 2.0 ports	
Serial Port	4 x RS232	
Parallel Port	1 x LPT	
Audio	Realtek high definition CODEC; Double deck Jack on front and back side (one input for microphone and one output for speak);	
Electrical	Input Voltage	100 to 240VAC
	Input Frequency	47 to 63Hz
	Input Current	< 1.5A @ 120VAC
	Output Voltage	+12VDC / 5.0A
	Ripple Voltage	< 120mVp-p
Mechanical	Dimensions: 146 mm (height) x 150 mm (width) x 218 mm (depth)	
	Weight: 1.2 kg	
	Housing: Aluminum Die Casting	
Environment	Operating Temperature	5°C to 40 °C ()
	Operating Humidity	8 to 80% (non condensing)
	Storage Temperature	0°C to 60 °C ()
	Storage Humidity	5 to 80% (non condensing)
Available Accessories ⁽¹⁾	- Wall mount bracket - Wifi	